PHENIX

TECHNICAL SUPPORT 2009

PHENIX WEEKLY PLANNING

4/30/2009

Don Lynch

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TECHNICAL SUPPORT 2009

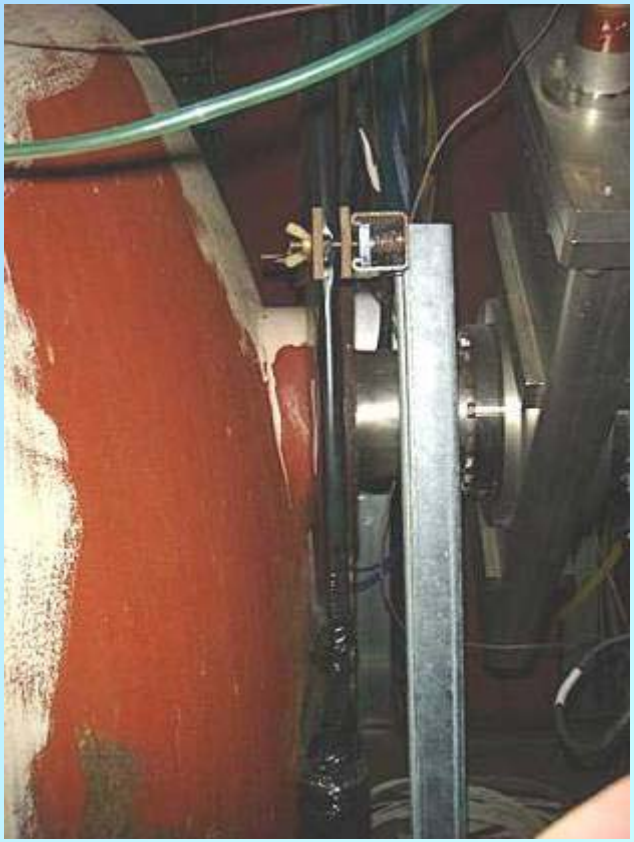
Yesterday's Maintenance Access Day

- MuTr NMM access: signal cable swap, N2 flow adjustments
- TofW HV cable swapped
- RPC Installation Gap 5 prep
- RPC Installation Crane Support measurements
- Tunnel scintillators remounted and relocated
- HBD HV module replaced channel noise troubleshooting
- Miscellaneous subsystem troubleshooting

Next Maintenance Access Day – May 13

Anyone wishing to access the Tunnel either north or south of the IR should inform the RC at least 2 days ahead of time to coordinate with C-A-D. If you require technician assistance inform me as well.

TECHNICAL SUPPORT 2009



Scintillators remounted in North and South tunnels. This task was not properly planned: fortunately we had techs and materials available.

Problem encountered in South tunnel. Recent signal and grounding cable installation was found to be crossing the shielding track. Frank had to re-route these cables. Use existing cable tray. If in doubt consult Steve, Paul or me.

Offending cables were here or similar location

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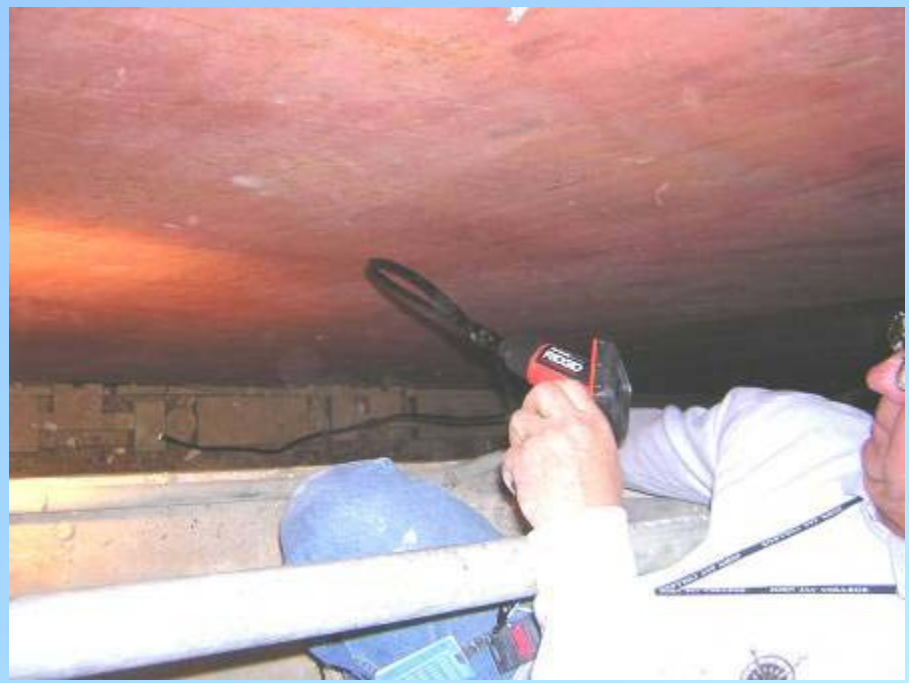
Gap 5 North



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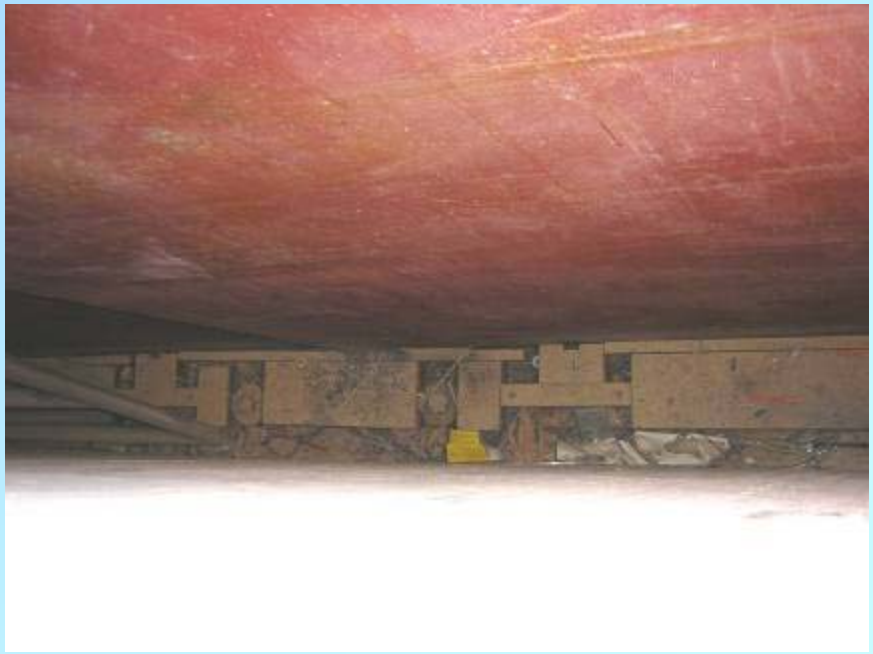
Gap 5 North

East side after fishing



West side before fishing

Gap 5 North

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TECHNICAL SUPPORT 2009

Shutdown '09 Major tasks (expect 5 month shutdown):

- 2009 shutdown Begins June 28
- End run, remove wall, MuID collars down, EC to AH (3 weeks)
- RPC Factory Operations (in progress and continuing beyond Shutdown '09)
- RPC Station 3 North (entire shutdown)
- Install Station 1 South scaffolding (1 week)
- Install Station 2/3 scaffolding (2 weeks)
- Install stations 1, 2 and 3 south MuTrigger FEE's (12 weeks)
- MuTr decapacitations: station 3 south (3 weeks)
- PC1 East repair (4 weeks)
- Mechanical/Electrical Plumbing installation of (4) new DCM racks
- Add Ar Dewar and expand gas pad to add storage (12 weeks)
- Prep for future upgrades/existing equipment maintenance & Repair (as necessary)

End of Run, Start of Shutdown

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TECHNICAL SUPPORT 2009

• End of Run Party	6/26
• End of Run 9	6/28
• Flammable Gas Purge	6/30
• Open Wall and Disassemble	7/2
• MuID Collar Removal	7/8
• Move MMS South	7/10
• Disconnect EC and move to AH	7/17
• Move MuID Collars to AH	7/20
• Install IR floor plates, rolling cart & manlift in IR	7/22
• Reconnect EC for shutdown mode	7/24
• Remove East/West vertical & Upper Bias MMS lampshades	7/24

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RPC Factory Operations

• Gap and Module assembly and testing (continues through shutdown)	in-progress
• Gap and Module Storage with humidity control (need to get permanent elec., 2nd humidity controller & covers for last 3 storage racks)	Operating
• Tilting transport Table	Nearly complete
• Burn in test stand (Bike rack section)	5/15 (on deck)
• Burn-in test stand gas system and controls (ready for 1st half octant)	5/29
• Assembly of half-octants for station 3 north	6/1-9/1

RPC Factory

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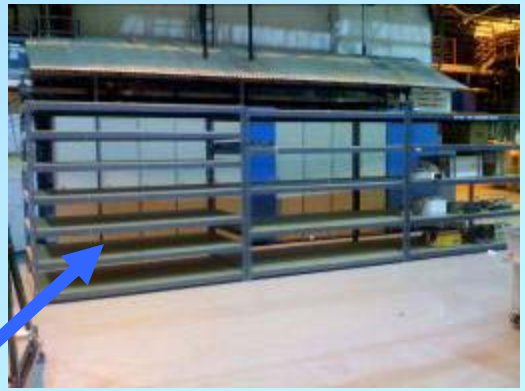
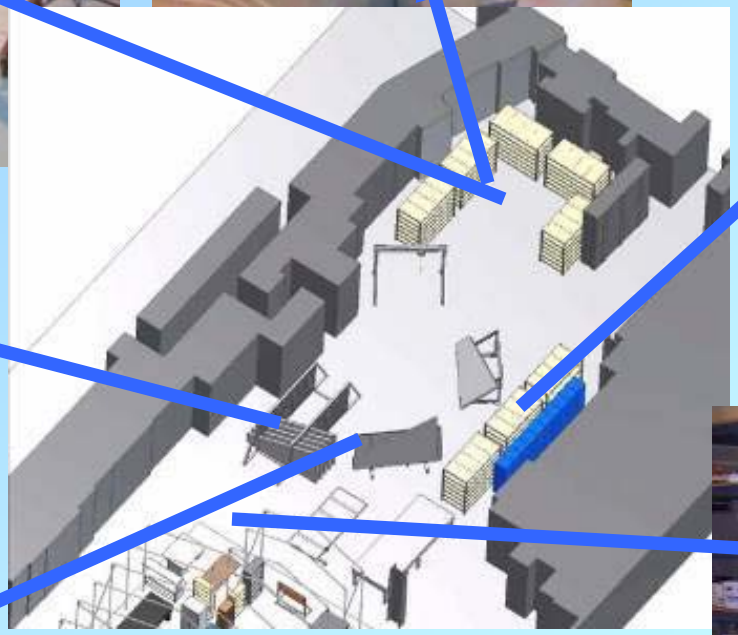


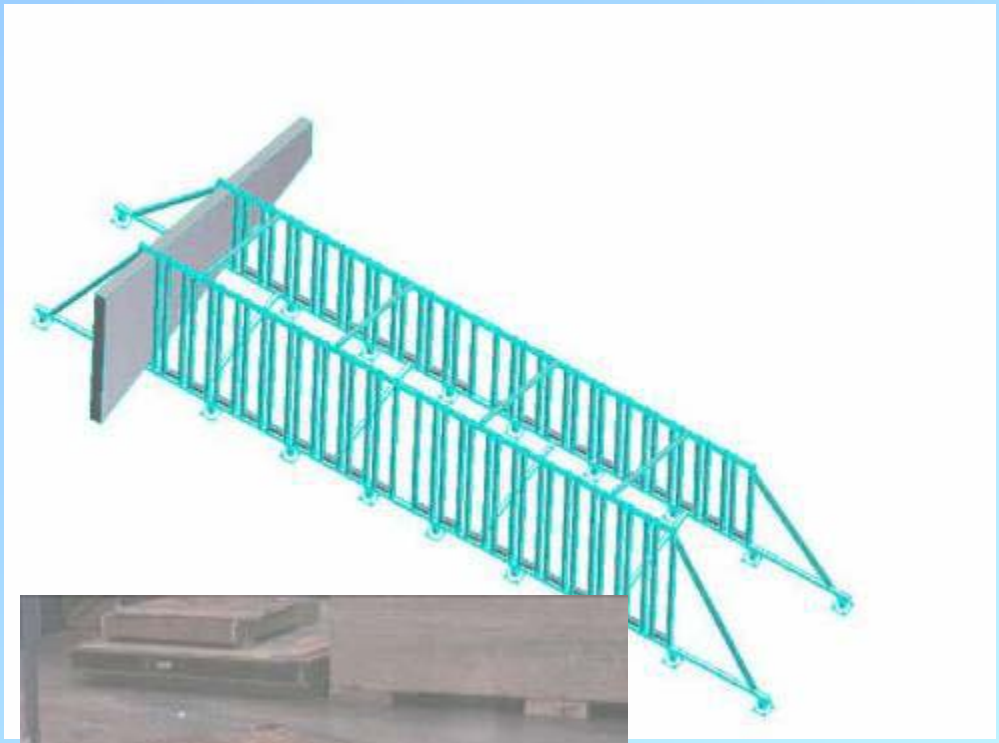


RPC Factory

Tilting Transport Table

Fabrication in progress

RPC Factory Burn In Test Station
For Octant and Half Octant Burn-in Tests



Assembly to begin soon

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TECHNICAL SUPPORT 2009

RPC3 North Installation Schedule

Installation Concept Finalized	Apr. 24
Half-Octant Brackets, Connecting Blocks, under detector translating support design	Apr. 30
Installation Fixturing and Tooling Design	May 15
Redesign crystal palace/IR Gas Barrier	May 29
End of Run 9	June 28
Fixturing/Tooling, Brackets/Block/support Fabrication	June 30
Move Shielding/Remove Crystal Palace	June 29-July31
Move cable trays and piping in gap 5	June 29-July 31
Simulated (practice) installation with new fixturing/ tooling	July 13-July 31
Install, level & survey support structure	Aug. 3 - Aug 14
Half Octant Testing and Assembly Complete (1^{st} half Octant ready by Aug.17, 16^{th} by Sep.18)	Aug. 17- Sep. 18
Mechanical Install Align & survey RPC3 N	Aug 17 – Sep. 30
Install 3 elect. Racks, all cables & gas system	Oct. 1 – Oct. 30
Commissioning	Nov. 1 – Nov. 30
Install new crystal palace/IR Gas Barrier & Shielding	Nov. 1 – Nov. 30
Start Run 10	Dec. 1

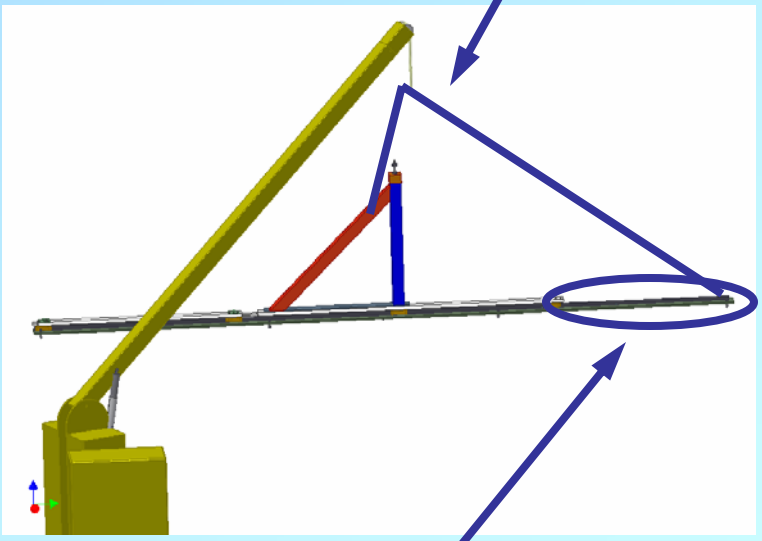
TECHNICAL SUPPORT 2009

Installing the roller support structure is the first step of installation. The procedure for this step would go something like this:

1.
   a) Practice rigging and survey in factory with simulated gap 5
   b) Pre-set 7 adjusting screws to 1st best guess.
   c) Rig the west base (with rail, pillow blocks, carriage and columns) into place.
   d) Using simulated half-octant survey scale obtain position error
   e) Lift base, readjust leveling screws, repeat 2-4

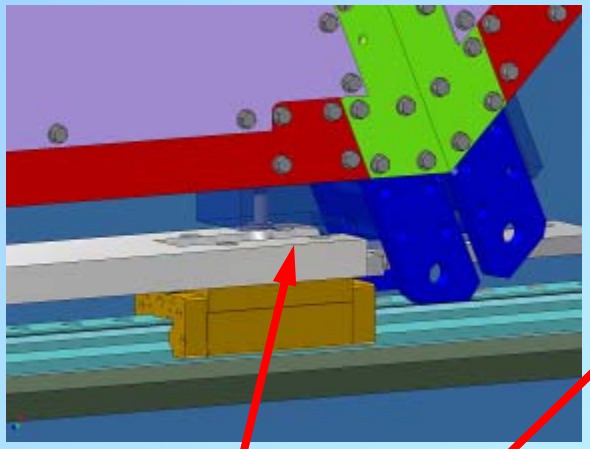
2. Do the same for east base

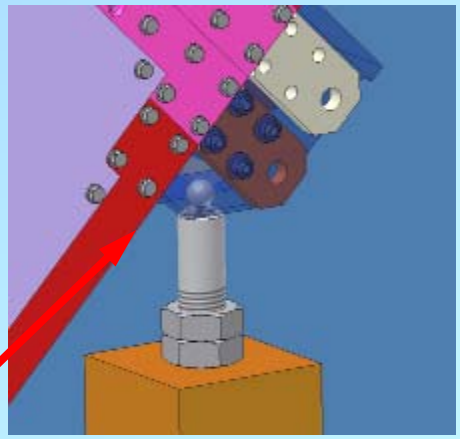
Rigid fixture or sling needed to attach at IR corner end and to short column. Fixture must lift from slightly to the beam side so that base can be accurately repositioned from IR corner side. Sling must be remotely detachable from either IR corner or tunnel floor after base is permanently set.

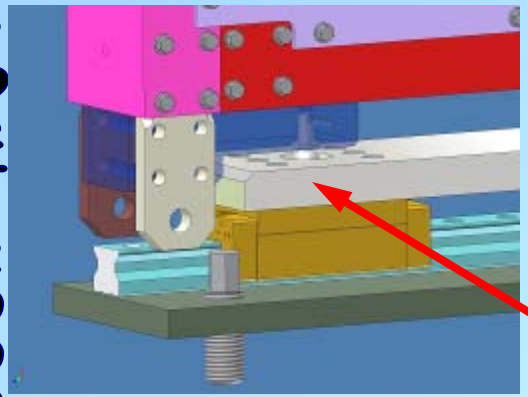


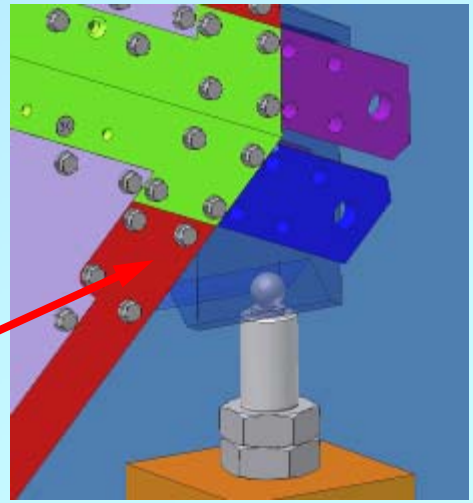
Fixture needs a bar in this location that locks slider in inner most position. Lock must be removable from far end floor level in IR

4 lower OD interconnect blocks 2 on HO_1 have adjustment balls which mate to cone & groove on base; other 2 blocks have grooves which mate with adjustment balls on base columns. East and west are the same.



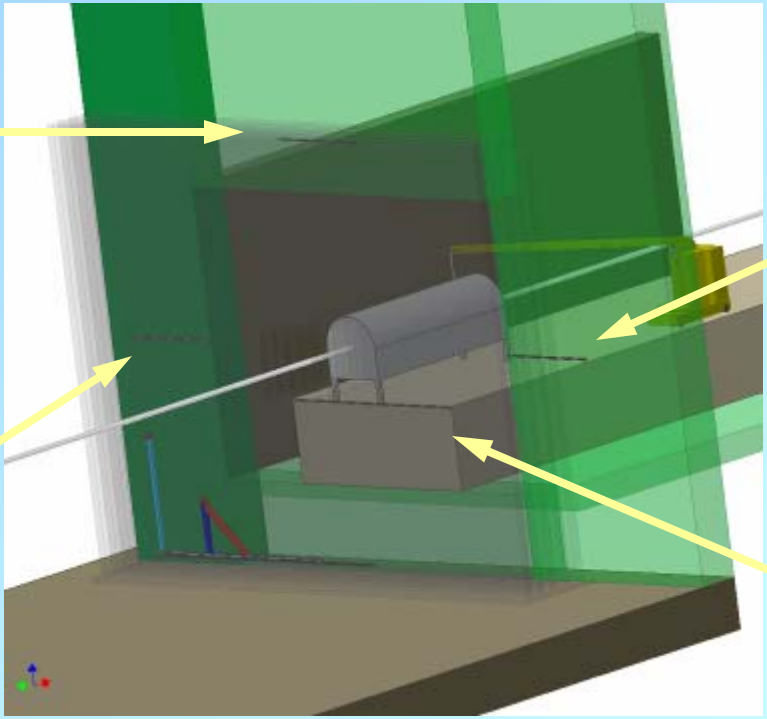






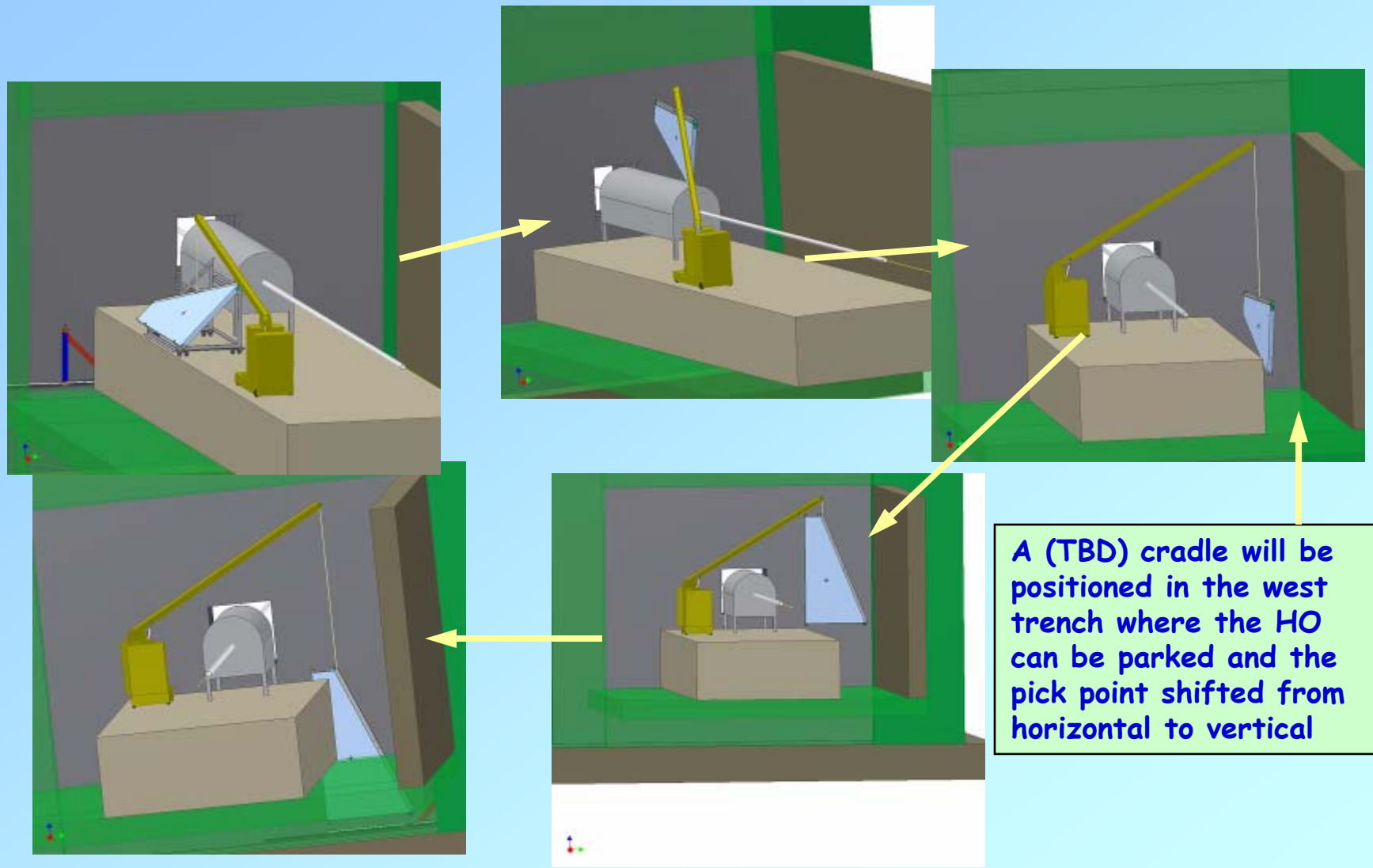
Note: *All interconnects to have bolt holes for both Half octants connected whether used or not.*

After the base support structures have been installed, Install the unistrut guide rails at the pedestal, above the gap 5 steel and at beam height levels. These rails will be used to prevent pitch rotation (about the horizontal axis perpendicular to the beamline [X-axis]).



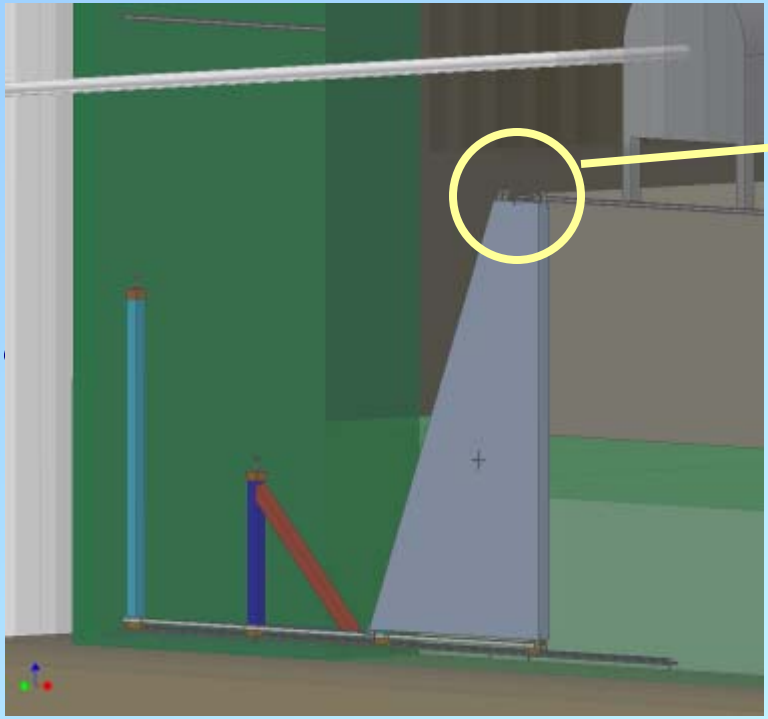
Note: This view looks thru MuID Steel which has been made transparent for this representation

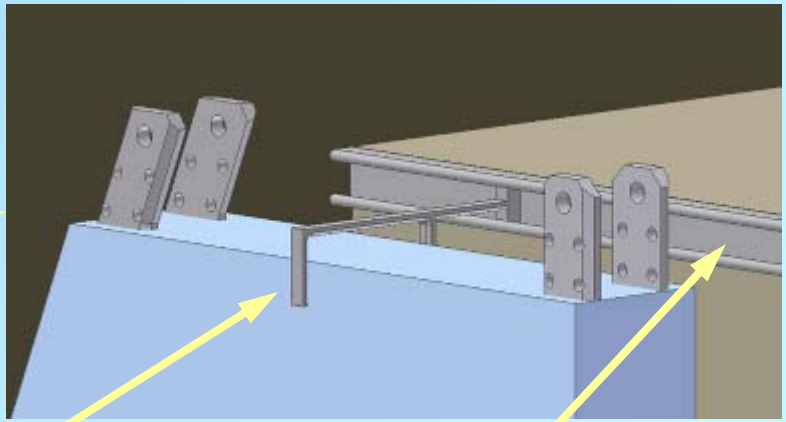
Half Octant West #1



A (TBD) cradle will be positioned in the west trench where the HO can be parked and the pick point shifted from horizontal to vertical

After HO1 west is installed, the clamp shown is used to keep the HO stable in the vertical configuration. Clamp is idealized actual clamp will have adjustments to align the pitch angle.



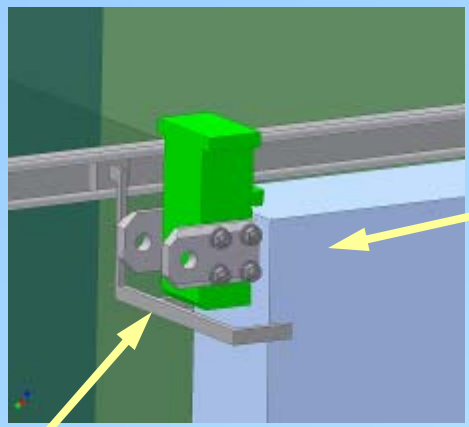


Clamp

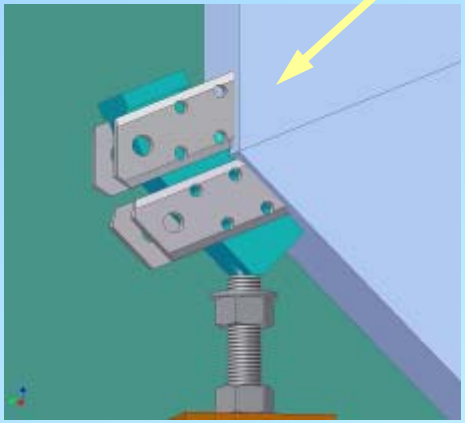
Unistrut low profile rail

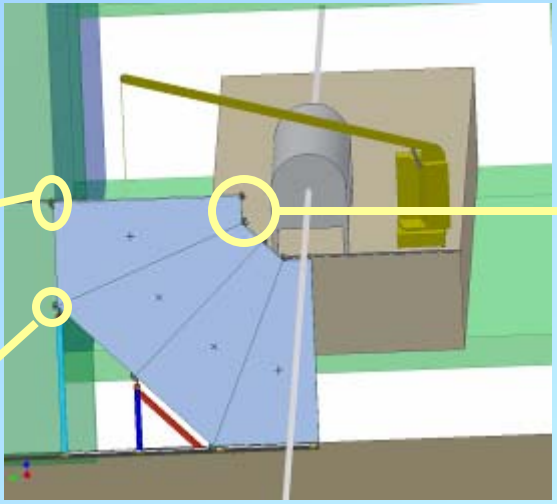
Note: These views look thru MuID Steel which has been made transparent for this representation

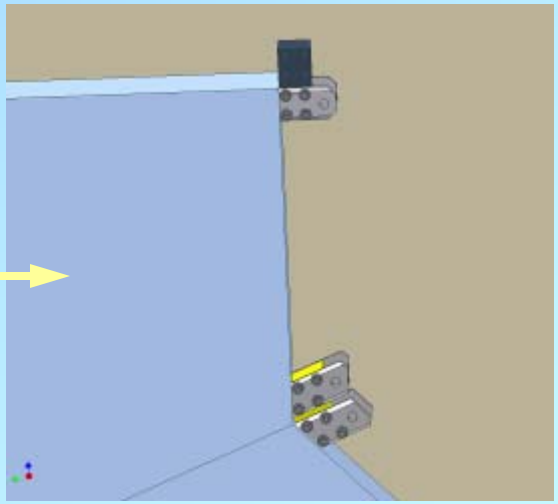
Half Octant West #4



Sliding clamp

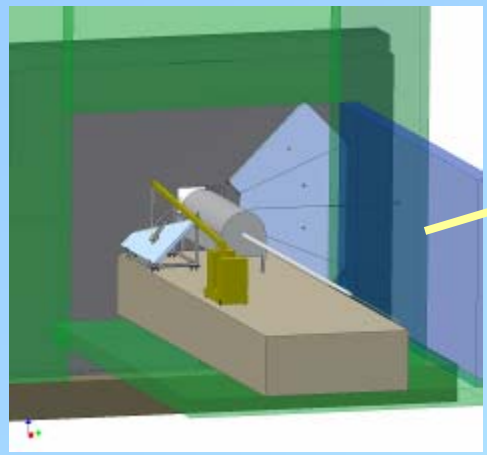
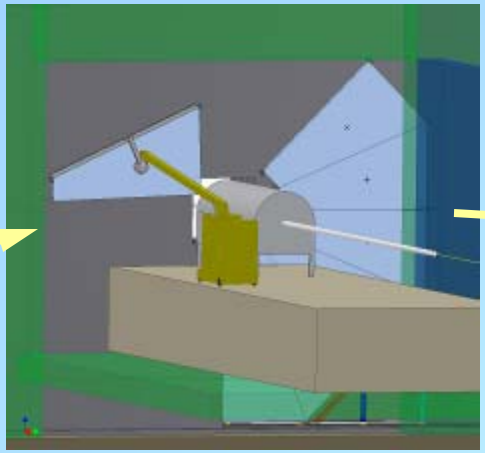
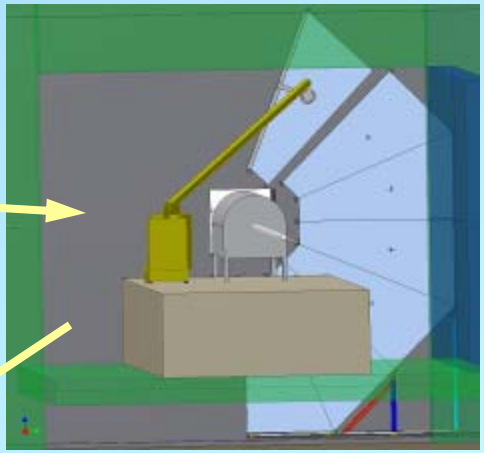
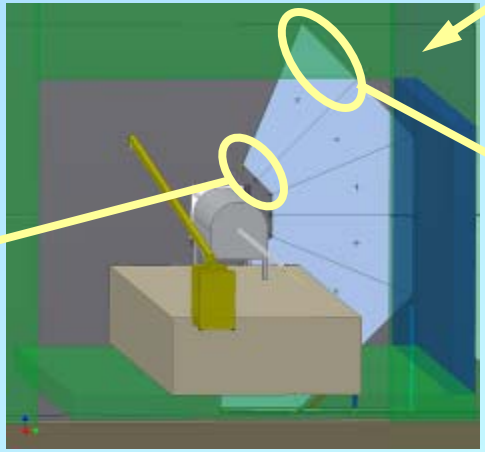
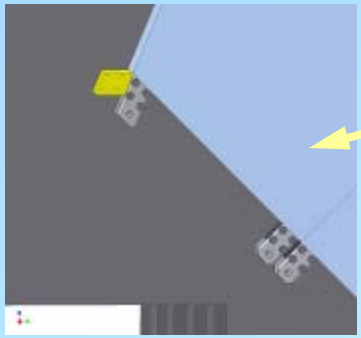
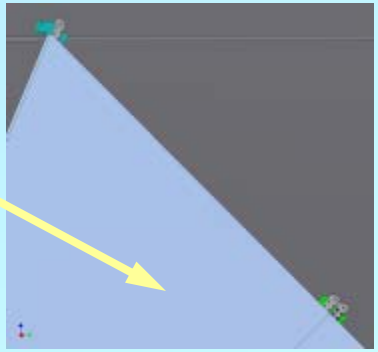






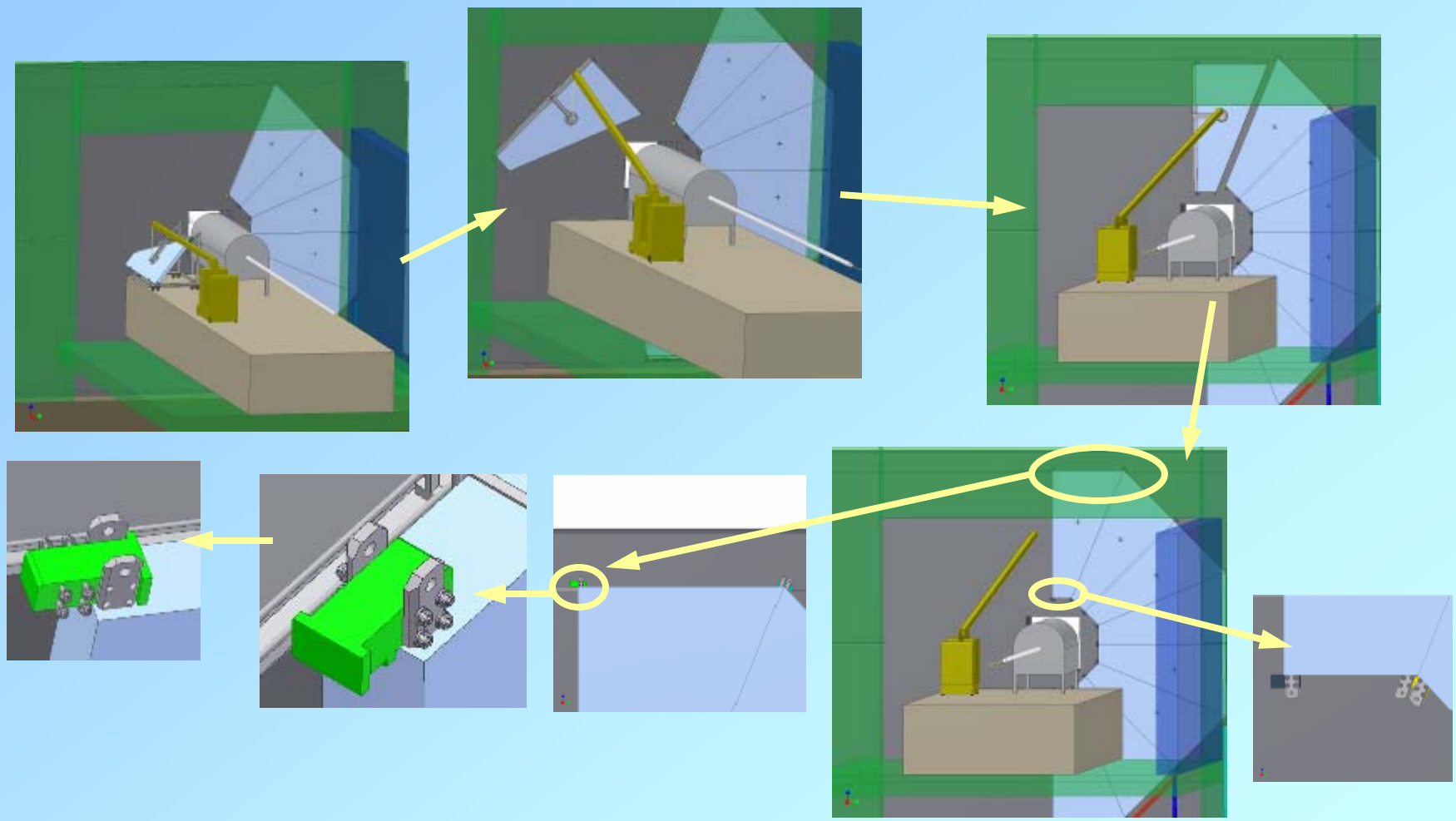
View looking thru MuID steel plates which have been made transparent. After HO_4 is positioned onto HO_3, inner angled connector at inner 3-4 joint is bolted, inner straight connector has been unbolted from lifting fixture and remains in place to accept HO_5. At outer face lower brackets have been locked into angled bracket at outer 3-4 joint and straight bracket remains in place to accept HO_5. West sliding base is slid west 60" and clamp is attached to the outer face of HO_4 and positioned to slide in the mid plane unistrut channel. After the clamp is attached slide the base back to the 0 position

Half Octant West #7

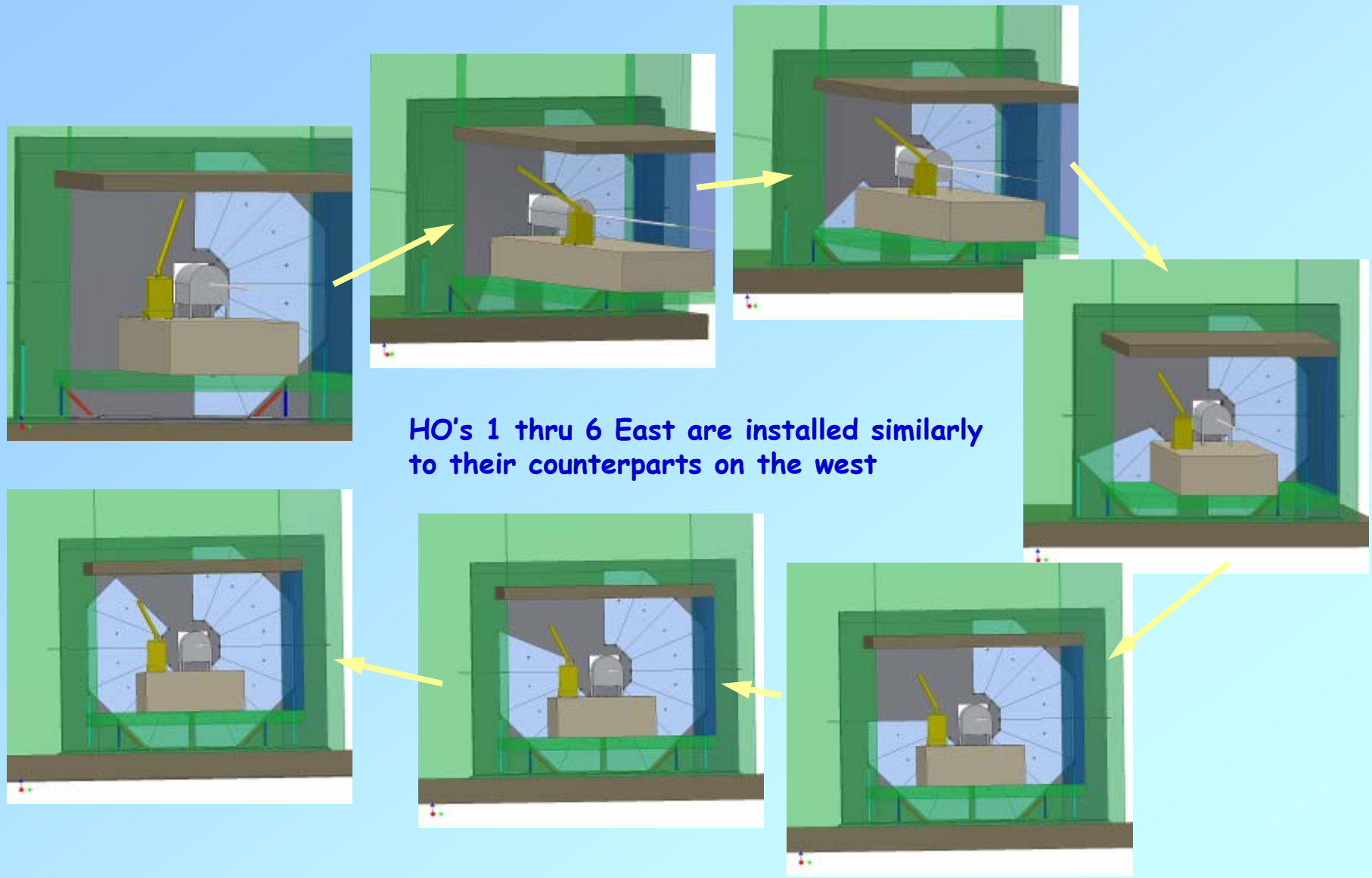







Note: Installation of HO_7 may require additional capabilities in the lifting fixture not evident in the model used above. See HO_8 west for more info.

Half Octant West #8

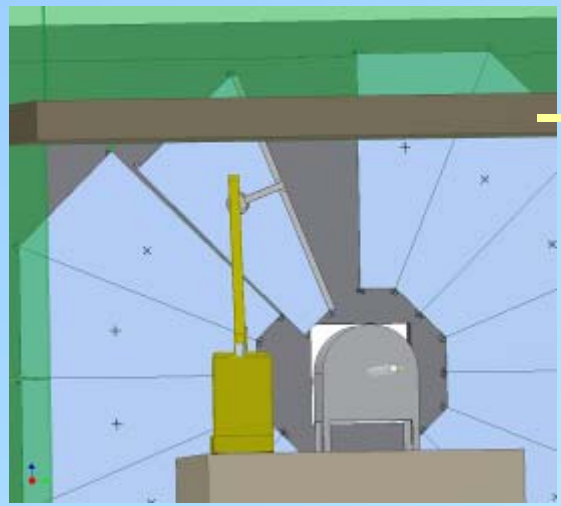


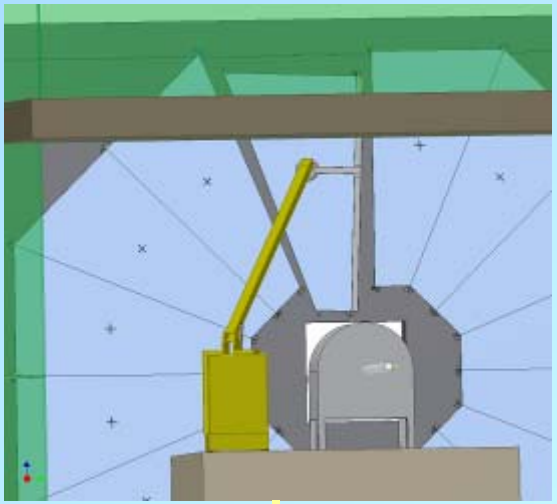
Half Octants East #1 to 6

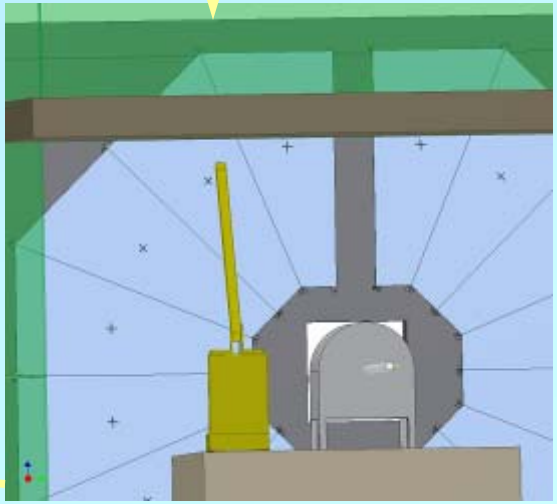


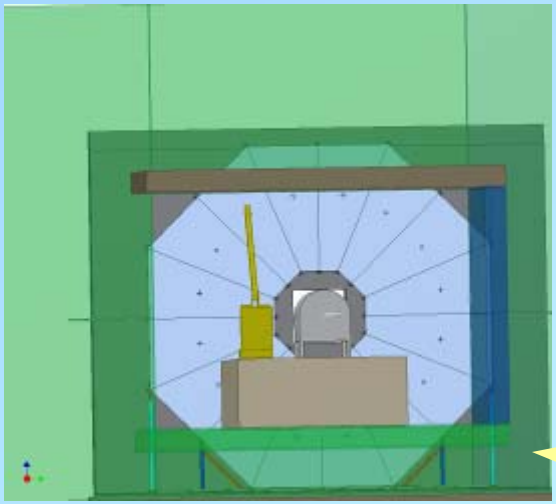
HO's 1 thru 6 East are installed similarly to their counterparts on the west

Half Octants East #7 & 8







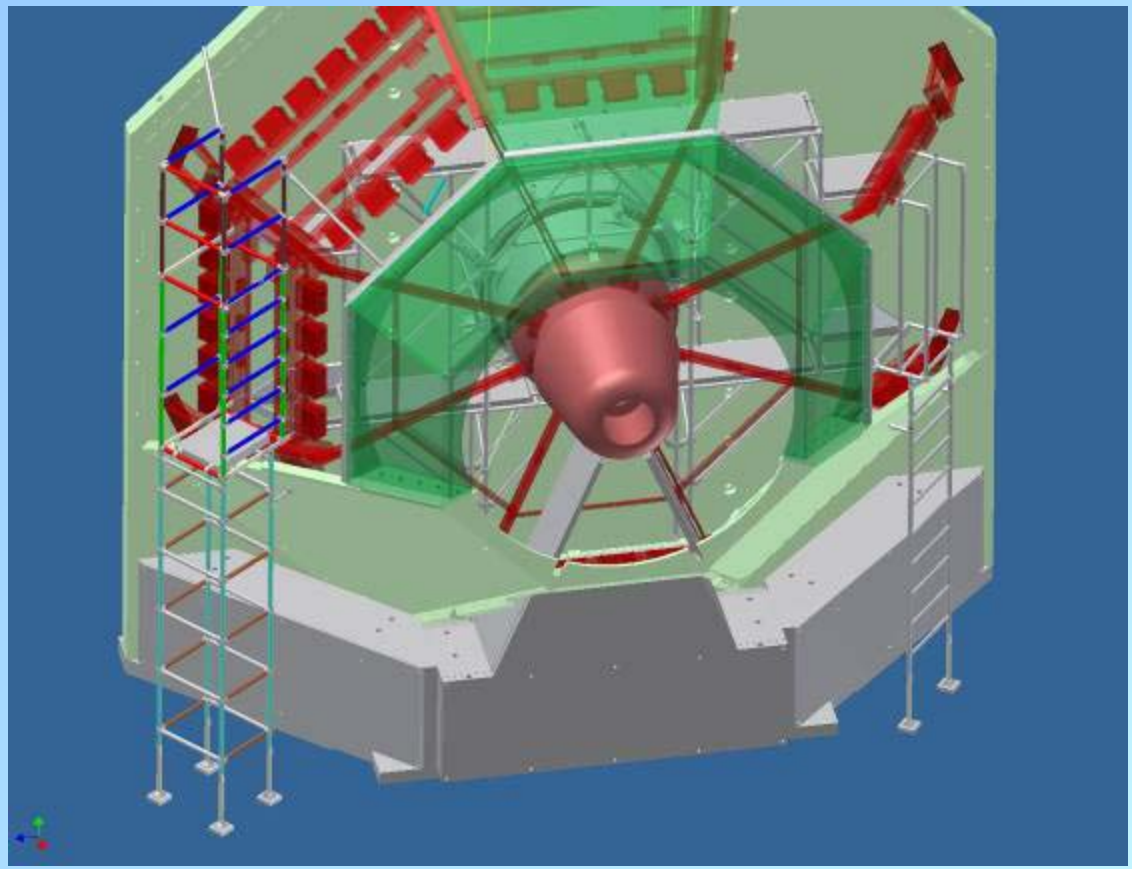


HO's East 7 & 8 need to use the arm as West 7 & 8 did. The east and west bases should be recessed from the center as far as possible (12" each way?) prior to installation. After installation east and west are mated.

MuTrigger FEE South

TECHNICAL SUPPORT 2009

- Install Station 1 South Scaffold (carpenters) 7/31
- Install station 2/3 scaffolding (Techs) 8/14
- Install station 1 FEE's 8/28
- Install station 1 electronics and cable mngment 8/28
- Station 1 plumbing 9/11
- Install station 2/3 FEE's 9/25
- Install station 2/3 electronics & cable mngment 9/25
- Station 2/3 plumbing 10/9



Concept approved at
C-A Design Review

Met with Donna Dowling to discuss
Bargaining Unit negotiations

MMS scaffolding

Designed for MuTr installation. Approved in 2000 for use. Stress analysis done for worst case. Current design has minor modifications.

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TECHNICAL SUPPORT 2009

MuTr Decapacitations

Station 2/3 Decaps	8/14-8/28
Testing/verification	9/4

PC1 East Repair

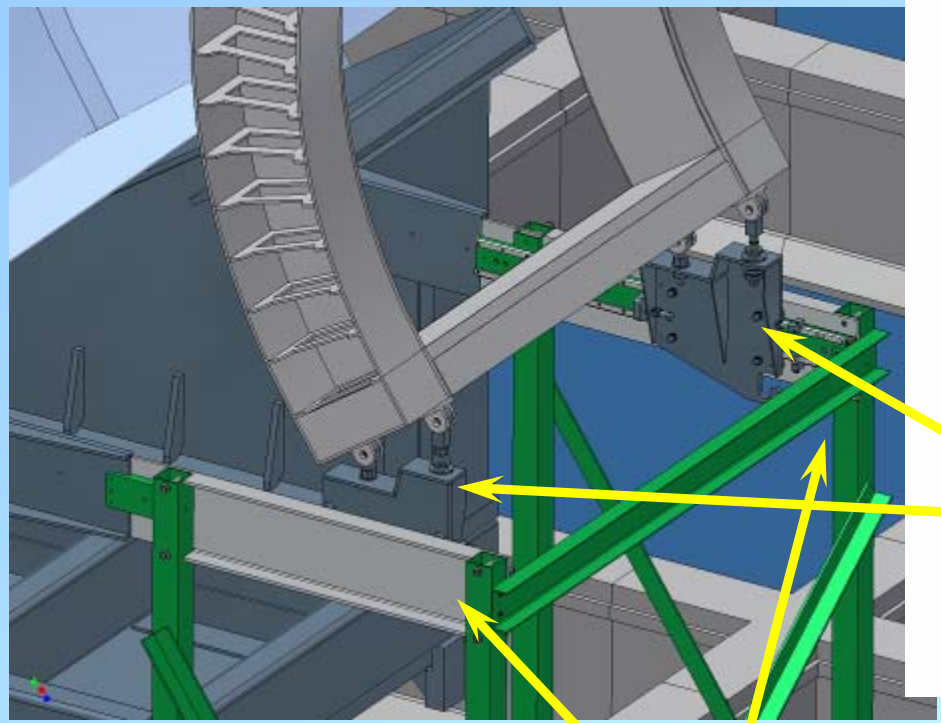
TECHNICAL SUPPORT 2009

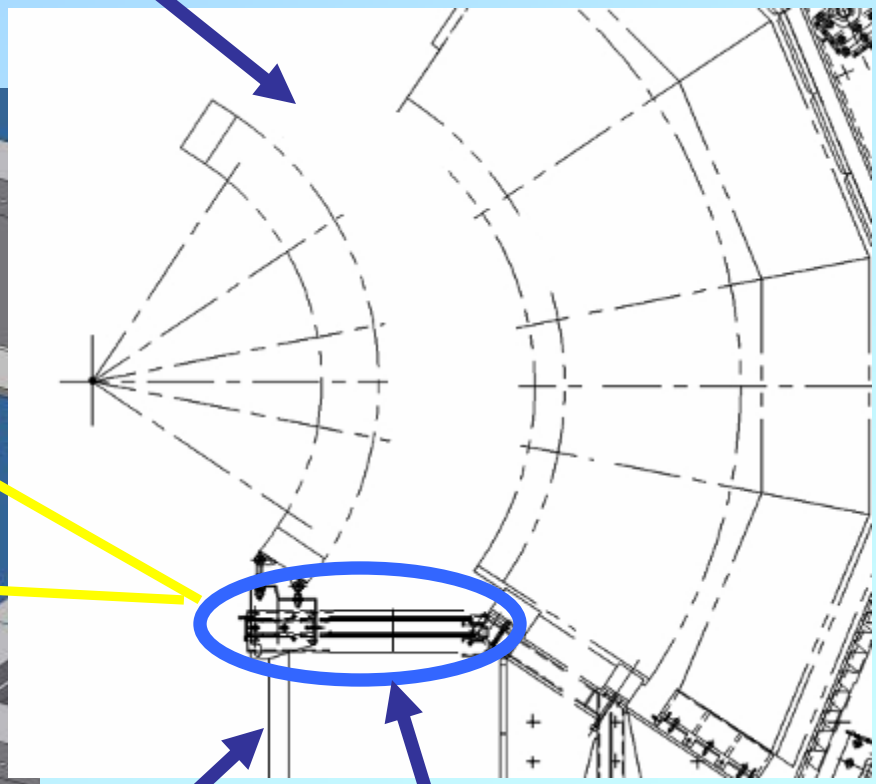
• Design Repair support fixture	Done
• Review and approval	Done
• Fabrication	7/1 (order placed)
• Install support fixture	8/14
• Remove cables and plumbing	8/28
• Roll out DC/PC1	9/4
• Replace failed PC1	9/11
• Roll DC/PC1 in	9/18
• Restore cables and plumbing	9/25
• Test/commissioning	10/2

PC1 East Repair Fixturing Design

Repairs to be performed during '09 Shutdown

Access to PC1 is adequate to remove and replace module





Quote Rec'd from CS

New Column Supports Under railway extensions

New Railway extensions will allow DC to be pulled out ~ 3 feet more

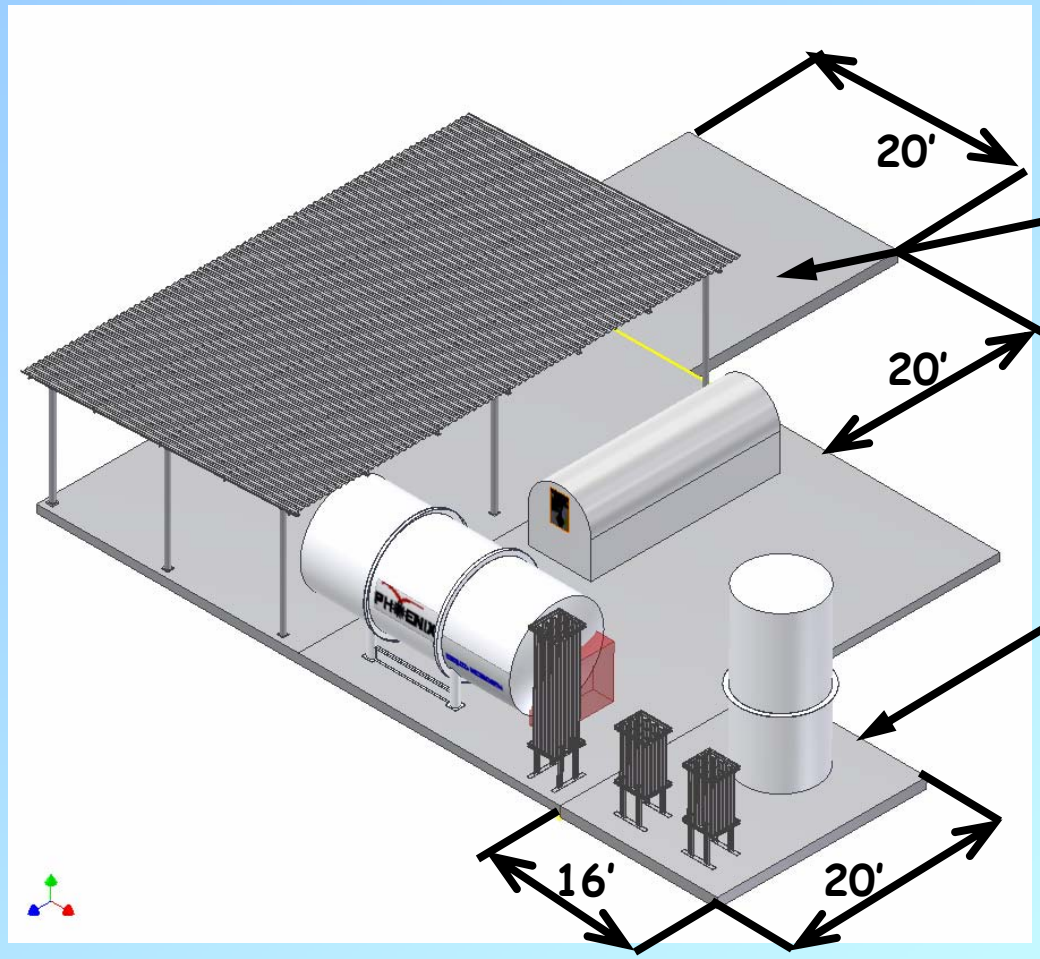
Gas Pad Expansion, New Argon Dewar

• Proposal	Done
• Review and Approval	5/1
• Design	6/1
• Site Preparation	7/1
• Install Empties racks	8/1
• Install Ar Dewar	9/1
• Test and Commission	10/1

(Rough guess actual schedule TBD)

New Argon Dewar

TECHNICAL SUPPORT 2009



New storage pad for empty gas cylinders, 20'x 20', 9" min thick. reinforced concrete

New Argon Dewar Pad, 16' x 20', 12" minimum thickness, reinforced concrete.

Met with Dave Phillips to walk thru the plan

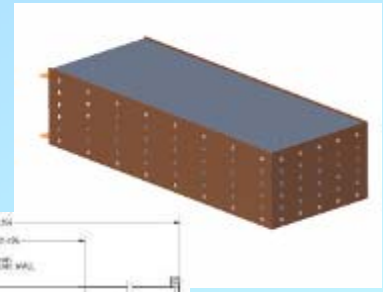
New DCM Rack Plumbing

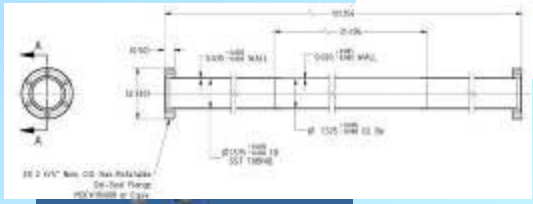
(Not Scheduled Yet)

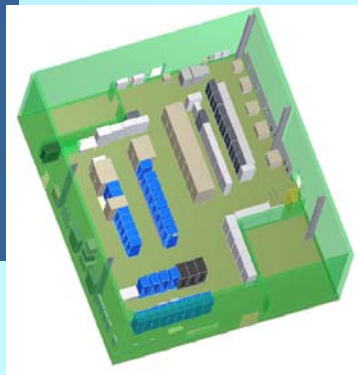
4 new DCM racks need cooling water plumbing

Other Work

Upgrades Support:
- New Beampipe sections (non-Be)
  - (Sent Drawings to Mike Mapes)
- New Beampipe supports
- FOCAL prototype design support
- VTX fabrication tooling design
- VTX installation design
- FVTX design/eng'g support







Summer Sunday Prep
TBD Existing Detector Maint & Repairs
Maintenance & Overhead Tasks
Rack Room Reorganization

C-A-D AC, Water System, Electrical system work which may impact shutdown schedule: *Tasks, schedules, priorities TBD*

2009 Building Maintenance Issues

- Roof leaks in utility bathroom at northwest corner behind tech offices and over door between rack room and assembly hall.
- Heat wrap tape for trailer bathroom toilet drains to preven freeze/clogging in winter.
- Improved Rack Room AC performance (This item has been addressed time and again but unsatisfactorily. Currently the AC fails periodically and is repaired only to fail again. On-condition maintenance is not adequate…an engineered solution is needed.)
- Icy conditions at mixing house north stairs

Safety, Security, etc.

1. New CAD OPM on Hot Work: OPM 1.91 Guidance for Fire Prevention during Welding, Cutting and Other Hot Work
applies to welding, heat treating, grinding (including machine shop grinders which have not been approved by the BNL Fire Chief as a Designated Area), thawing pipe, Powder driven fasteners, hot riveting, torch applied roofing) similar applications producing spark, flame or heat.

   Excludes candles, pyrotechnics, cooking, soldering irons, brazing pipes less than 1 inch ID (except in accelerator enclosures), approved welding/cutting areas)

2. Butt fires are on the rise at BNL: Please watch your butts.

3. Swine Flu:
   - Wash your hands frequently with soap and water or use an alcohol-based hand gel.
   - Cover your nose and mouth with a tissue when you cough or sneeze
   - Throw the tissue in the trash after you use it.
   - To reduce the risk of transmission, avoid touching your eyes, nose, and mouth.
   - If you have flu-like symptoms, you should stay home.
   - If you have symptoms consistent with the flu, call your doctor.
   - Avoid contact with sick people.

Where To Find PHENIX Engineering Info

Jury Duty
I still haven't been called

Links for the weekly planning meeting slides, archives of past meeting slides,long term planning, pictures, videos and other technical info can be found on the PHENIX Engineering web site:

http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm